

Applicant : Graeme C. McKinnon  
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Filed : August 10, 2000  
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Attorney's Docket No.: 10527-651RE1/PG8721B

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### REMARKS

Claims 1-50 and 52-69 are pending. Claims 28-34, 40-50 and 53-64 are rejected. Claims 35-39 and 52 are objected to. The applicant respectfully traverses the rejections and requests reconsideration in view of the arguments below.

#### **I. The 103 Rejections**

##### The Examiner's Argument

The Examiner asserts in response to the applicant's previous arguments filed May 23, 2005, that "[t]he claim language does not preclude an additional element of the plug 18 across the conductive element". The Examiner is mistaken. In fact, the claim language does preclude the plug 18. The claim requires "at least one open ended conductive element" (this language was added to the claim in the previous amendment).

Rubinson discloses a probe including inner and outer conductors that are electrically short circuited to one another by a plug at a distal end of the probe (Col. 5, lines 45-47). Referring to Rubinson's Figure 1, the probe 10 includes a central conductor 16 that is electrically connected to a conductor 26 extending from a connector 14, so an electrical path is provided from the conductor 26 through the central conductor 16 to the plug 18 and the outer conductor 12 back to the shell of the connector 14. The inner and outer conductors of the probe 10 are electrically short circuited to one another by the plug 18. A radio frequency or microwave frequency pulse may then be transmitted down the central conductor of the probe to generate a magnetic field in the vicinity of the short circuited end of the probe (Col. 9, lines 19-22).

Because the inner and outer conductors of the probe 10 are electrically connected, they form a closed conductive path. In short, the plug 18 creates a closed ended conductive path. Accordingly, the inner and outer conductors of Rubinson are not open ended conductive elements. Thus, Rubinson does not disclose an antenna with at least one open ended conductive element as required by the claim.

Moreover, not only does Rubinson not disclose an antenna having an open conductor length including at least one open ended conductive element, Rubinson actually teaches away

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from this. Robinson's probe includes inner and outer conductors that short circuit by a plug at the distal end of the probe.

Certainly, the Examiner should give the claims their broadest reasonable interpretation. See MPEP 2111. However, the broadest reasonable interpretation must also be consistent with the interpretation that those of ordinary skill in the art would reach. *In re Cartright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999). Here, the Examiner's attempt to interpret "open ended conductive path" to have a scope that would cover a close ended conductive path is simply inconsistent with the interpretation that those of ordinary skill in the art would reach, and unreasonable.

#### Claims 28-39

Claim 28 recites a medical apparatus for imaging a wall of a body cavity in a patient by interacting with an MRI system which generates a magnetic field gradient and electromagnetic radiation externally from the patient and transmits the gradient and EM radiation into the patient and receives a response signal indicative of a resonant response from the patient. The apparatus includes an antenna and a controller. The antenna includes an open conductor length configured to be inserted into the cavity and provide the response signal, based on the resonant response from a region of the patient closely proximate the antenna, to the MRI system. The open conductor length includes at least one open ended conductive element. The apparatus further includes a controller coupled to the antenna and configured to receive the response signal to obtain an image of the cavity wall proximate the antenna.

Rubinson does not disclose an apparatus including an antenna as recited in claim 28. First, the probe disclosed in Robinson generates a magnetic field gradient and EM radiation internally to the patient. By contrast, the antenna recited in claim 28 interacts with an MRI system that generates EM radiation externally from the patient.

Second, the apparatus recited in claim 28 requires an antenna including an open conductor length, where the open conductor length includes at least one open ended conductive element. Robinson does not disclose an antenna having an open conductor length. By contrast, Robinson discloses a probe including inner and outer conductors that are electrically short circuited to one another by a plug at a distal end of the probe (Col. 5, lines 45-47). Referring to

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Rubinson's Figure 1, the probe 10 includes a central conductor 16 that is electrically connected to a conductor 26 extending from a connector 14, so an electrical path is provided from the conductor 26 through the central conductor 16 to the plug 18 and the outer conductor 12 back to the shell of the connector 14. The inner and outer conductors of the probe 10 are electrically short circuited to one another by the plug 18. Accordingly, the inner and outer conductors are not open ended conductive elements; the plug 18 creates a closed ended conductive path. A radio frequency or microwave frequency pulse may then be transmitted down the central conductor of the probe to generate a magnetic field in the vicinity of the short circuited end of the probe (Col. 9, lines 19-22).

Accordingly, Rubinson fails to disclose the limitations of claim 28, which is therefore in condition for allowance.

Claims 29-39 depend from claim 28 and are therefore allowable for at least the same reasons as claim 28.

#### Claims 40-48

Claims 40 recites a method of generating an image of a wall of a body cavity in a patient. The method includes inserting an antenna including an open conductor length into the cavity, where the open conductor length includes at least one open ended conductive element, and generating a magnetic field gradient and EM radiation external from the patient. As discussed above in reference to claim 28, Rubinson discloses a probe that generates a magnetic field gradient and EM radiation internal to a patient, and does not include at least one open ended conductive element. Accordingly, claim 40 is allowable over Rubinson. Claims 41-48 depend from claim 40 and are therefore allowable for at least the same reasons as claim 40.

#### Claim 49

Claim 49 recites a method of generating an image of a blood vessel wall of a blood vessel in a patient. The method includes inserting an antenna including an open conductor length into the blood vessel, where the open conductor length includes at least one open ended conductive element. A magnetic field gradient and EM radiation is generated external from the patient. As discussed above in reference to claim 28, Rubinson discloses a probe that generates a magnetic

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field gradient and EM radiation internal to a patient, and does not include at least one open ended conductive element. Accordingly, claim 49 is allowable over Rubinson.

Claims 50 and 52-53

Claim 50 recites a medical apparatus for imaging a blood vessel wall by interacting with an MRI system which generates a magnetic field gradient and EM radiation external from the patient. The apparatus includes an antenna having an open conductor length including at least one open ended conductive element. As discussed above in reference to claim 28, Rubinson discloses a probe that generates a magnetic field gradient and EM radiation internal to a patient, and does not include at least one open ended conductive element. Accordingly, claim 50 is allowable over Rubinson. Claims 52-53 depend from claim 50 and are therefore allowable for at least the same reasons as claim 50.

Claims 54-55

Claim 54 recites a medical apparatus for imaging a body cavity wall of a body cavity of a patient by interacting with an MRI system which generates a magnetic field gradient and EM radiation external from the patient. The apparatus includes an MRI antenna configured to be inserted into the body cavity, and includes an open conductor length having at least one open ended conductive element. As discussed above in reference to claim 28, Rubinson discloses a probe that generates a magnetic field gradient and EM radiation internal to a patient, and does not include at least one open ended conductive element. Accordingly, claim 54 is allowable over Rubinson. Claim 55 depends from claim 54 and is therefore allowable for at least the same reasons as claim 54.

Claims 56-64

Claim 56 recites a method of generating an image of a wall of a body cavity in a patient. The method includes inserting an MRI antenna into the body cavity, the antenna including an open conductor length having at least one open ended conductive element. As discussed above in reference to claim 28, Rubinson discloses a probe that does not include at least one open ended conductive element. Accordingly, claim 56 is allowable over Rubinson. Claims 57-64 depend from claim 56 and are therefore allowable for at least the same reasons as claim 56.

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## II. The Allowable Subject Matter

Claims 1-27 and 65-69 are allowable. Claims 35-39 and 52 are objected to as being dependent upon a rejected base claim. In view of the remarks above, the applicant respectfully submits that claims 35-39 and 52 are in condition for allowance.


## III. Request for an Examiner Interview

Should the Examiner not find the applicant's submissions persuasive, the applicant respectfully submits that a telephonic Examiner interview may be helpful at this time. The applicant's representative, Brenda Leeds Binder, left a message with the Examiner the week of September 26<sup>th</sup>, and will attempt again to reach the Examiner to schedule an interview. Alternatively, the Examiner may contact Sarah Hoke at 650-839-5024 to schedule an interview time at the Examiner's convenience.

No fees are believed due. However, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 10/3/05

  
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